Claims

What is claimed is:

1. A method of performing an assay comprising:

providing an assay system which receives a biological liquid sample potentially containing at least one analyte of interest and outputs a light signal indicative of a rate of reaction between said analyte of interest and a reactive element within said assay system;

measuring light emitted from said assay system over time;

correlating said rate of reaction to a concentration of said analyte of interest; and

determining said concentration of at least one analyte of interest in said biological liquid sample based on said correlation.

2. The method according to claim 1, wherein said at least one analyte of interest is an ischemic marker.

3. The method according to claim 2, wherein said ischemic marker is selected from the group comprising troponin I, CK-MB, and myoglobin.

4. The method according to claim 1, wherein said assay system comprises:

a light source;

a biosensor comprising a waveguide having at least one planar surface, said waveguide associated in liquid tight attachment with a first member, said first member, in conjunction with said waveguide, defining at least one reaction area for containing the biological liquid sample, said at least one planar surface of said waveguide being associated in part with capture molecules exposed to said at least one reaction area; and

a light detector for detecting light passed through said planar surface.

5. The method according to claim 4, further comprising:

simultaneously introducing tracer molecules and the biological liquid sample into said at least one reaction area of said biosensor, wherein said tracer molecules are complementary with

said respective capture molecules and emit fluorescent light in response to stimulation by light of an appropriate wavelength; and

introducing light of said appropriate wavelength from said light source into said waveguide to stimulate a fluorescent light response in said tracer molecules which have attached to a portion of at least one said analyte of interest which has been captured by said capture molecules on said waveguide planar surface.

6. The method according to claim 1, wherein said concentration of said at least one analyte of interest is determined in a time period of less than about five minutes.

7. The method according to claim 1, wherein emitted light is measured at a plurality of time points.

8. The method according to claim 7, wherein emitted light is measured at a plurality of spaced time points.

9. The method according to claim 1, wherein said at least one analyte of interest is a marker released from cardiac tissue only after a myocardial infarction.

10. The method according to claim 9, wherein said marker comprises at least a portion of a myoglobin, creatine kinase, or troponin molecule or complex.

11. The method according to claim 1, wherein said at least one analyte of interest is a cardiac specific marker.

12. The method according to claim 1, wherein said determination of said concentration comprises determining concentrations of a plurality of analytes of interest in said biological liquid sample.

13. The method according to claim 1, further comprising continuing with said determination until a reliable determination is made of whether said at least one analyte is present in an amount indicative of a physiologic or disease state.

14. The method according to claim 13, further comprising reporting said reliable determination.

15. A method of diagnosing a cardiac disease state in a patient, the method comprising:

providing an assay system which:

receives a biological liquid sample from the patient, the sample potentially containing at least one analyte selected from at least portions of troponin, creatine kinase, and myoglobin molcules, complexes, and mixtures thereof; and

outputs a light signal indicative of a reaction between said at least one analyte and a reactive element within said assay system;

measuring light emitted from said assay system over a plurality of spaced time points;

correlating said reaction to a concentration of said at least one analyte; and

determining said concentration of said at least one analyte in said biological liquid sample based on said correlation in a time period less than about five minutes.

16. The method according to claim 15, wherein said determination of said concentration comprises simultaneously determining concentrations of a plurality of analytes of interest potentially in the sample.

17. The method according to claim 16, further comprising:

continuing with said determination until a reliable determination is made of whether said at least one analyte is present in an amount indicative of a physiologic or disease state.

18. The method according to claim 17, further comprising reporting said reliable determination.

19. A method of performing an assay comprising:

providing an assay system which receives a biological liquid sample potentially containing at least one analyte of interest and outputs a light signal indicative of a rate of reaction between said analyte of interest and a reactive element within said assay system;

measuring light emitted from said assay system at a plurality of spaced time points;

correlating said rate of reaction to a concentration of said analyte of interest; and

determining said concentration of at least one analyte of interest in said biological liquid sample based on said correlation.

20. The method of claim 19, wherein said concentration of at least one analyte of interest is determined in a time period of less than about five minutes.

21. An assay system for analyzing a biological liquid sample, comprising:

a light source;

a waveguide having at least one planar surface having capture molecules for at least one indicator of coronary artery disease associated therewith;

a first member associated in liquid tight attachment with said at least one planar surface of said waveguide, wherein said first member, in conjunction with said waveguide, defines at least one reaction area for containing the biological liquid sample while said at least one planar surface of said waveguide defines a floor or ceiling of said at least one reaction area;

a light detector for detecting evanescent light passed through said planar surface and generating an intensity signal indicating an intensity of said detected light; and

a controller for monitoring said intensity signal and correlating said intensity signal to a concentration of said analyte of interest in the liquid biological sample.

22. The assay system of claim 21, wherein said waveguide is optically associated with a rear lens oriented for reading light from said light source passing through said waveguide, to monitor coupling efficiency and beam quality.

23. The assay system of claim 21, wherein said capture molecules include capture molecules that bind with at least a portion of least one of a troponin, creatine kinase, or myoglobin molecule or complex.

24. The assay system of claim 21, wherein said at least one reaction area comprises a reservoir.

25. The assay system of claim 21, wherein said at least one reaction area comprises a well.